

Straight DZR Brass Automatic Balancing Valve Fig. Anvil ABV-9900V Series

Fig. 9907V

Mounted
Test Points

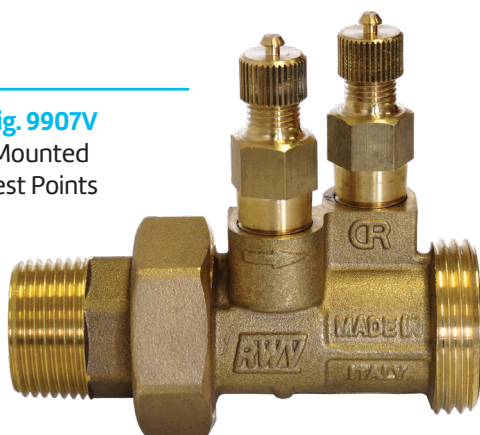


Fig. 9900V

Cartridge



Material Specifications

1. **Union Nut:** Brass ASTM B283 C37700
2. **Union¹:** DZR Brass UNS C35330
3. **Union O-Ring:** EPDM Perox
4. **Spring:** Stainless Steel AISI 302
5. **Body:** DZR Brass UNS C35330
6. **Cartridge O-Ring:** EPDM Perox
7. **Shaped Opening:** Stainless Steel
8. **Cartridge Body:** DZR Brass UNS C35330
9. **Cartridge Spring:** Stainless Steel AISI 302
10. **Test Point/Plug:** DZR Brass² UNS C35330

¹ In two pieces for ¾" - L and 2" F threaded version

² Plug with copper gaskets. Test points with EPDM Perox gaskets and polypropylene ties.

Threaded F/F (ASME B1.20.1 – NPT) or solder joint (ASME B16.22) union ends. Wide range of flows available (see cartridge section). 300 WOG (Maximum 300 psi up to 160°F. Maximum 150psi at 260°F.)

Available on following versions:

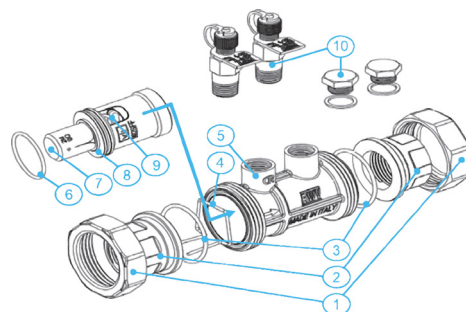
ABV-T-9907 (NPT Union F/F Ends) with mounted test points

ABV-S-9909 (CxC Union Ends) with mounted test points

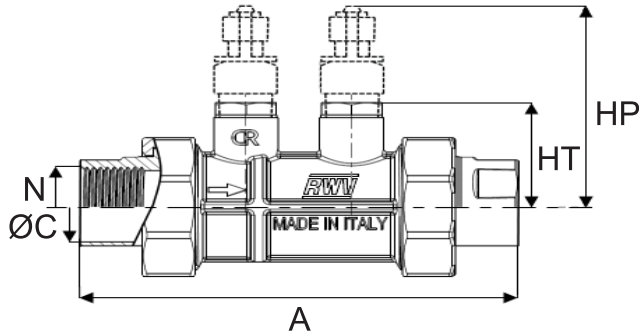
Working Conditions:

- **Water (15°F to 260°F)**
(Glycolic-Ethylene and glycolic-propylene mixtures up to 50% may be used.) below 32°F only for water with added anti-freezing fluids over 212°F only for water with added anti-boiling fluid
- **Flow Range**
Valves up to ¾" L: 0.32GPM – 3.17GPM
¾" and 1" valves: 2.06GPM – 15.1 GPM
1¼", 1½", and 2" valves: 4.91GPM – 41.2GPM
2"H and 2½" valves: 25.4GPM – 105GPM
- **Working ΔP** depending on selected cartridge

For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.



Straight DZR Brass Automatic Balancing Valve Fig. Anvil ABV-9900V Series



Straight DZR Brass Automatic Balancing Valve

Valve Size	N	ØC ¹	A ²	HT/HP	Cv ³	Approx. Wt. Each	
						Valve	Cartridge
In./mm	In./mm	In./mm	In./mm	In./mm	GPM	Lbs./Kg	Lbs./Kg
½	½	0.627-0.631	3.78/3.41	1.08/2.34	14	0.83/0.73	0.10
15	15	15.93-16.03	96.0/86.6	27.4/59.4	–	0.38/0.33	0.05
¾	¾	0.877-0.881	4.65/3.96	1.08/2.34	14	0.99/0.76	0.10
20	20	22.28-22.38	118.1/100.6	27.4/59.4	–	0.45/0.34	0.05
¾	¾	0.877-0.881	4.47/4.51	1.34/2.60	21	1.16/1.03	0.21
20	20	22.28-22.38	113.5/114.6	34.0/66.0	–	0.53/0.47	0.10
1	1	1.128-1.131	4.72/4.74	1.34/2.60	27	1.45/1.21	0.21
25	25	28.65-28.73	119.9/120.0	34.0/66.0	–	0.66/0.55	0.10
1¼	1¼	1.378-1.381	6.27/6.82	1.61/2.87	97	2.78/3.17	0.56
32	32	35.00-35.08	159.3/173.2	40.9/72.9	–	1.26/1.44	0.25
1½	1½	1.628-1.632	6.27/7.06	1.61/2.87	97	3.34/3.18	0.56
40	40	41.35-41.45	159.3/179.3	40.9/72.9	–	1.52/1.44	0.25
2	2	2.128-2.132	8.20/7.56	1.61/2.87	94	4.55/3.28	0.56
50	50	54.05-54.15	208.3/192.0	40.9/72.9	–	2.06/1.49	0.25
2H	2	2.128-2.132	9.16/9.82	2.36/3.62	189	7.83/7.45	3.01
50	50	54.05-54.15	232.7/249.4	59.9/91.9	–	3.55/3.38	1.37
2½	2½	2.628-2.632	9.50/10.01	2.36/3.62	228	8.31/7.47	3.01
65	65	66.75-66.88	241.3/254.3	59.9/91.9	–	3.77/3.39	1.37

¹ Tolerance field

² Threaded ends / soldering ends

³ For valve body without cartridge

⁴ Threaded ends / soldering ends, over with test points +0.10lb

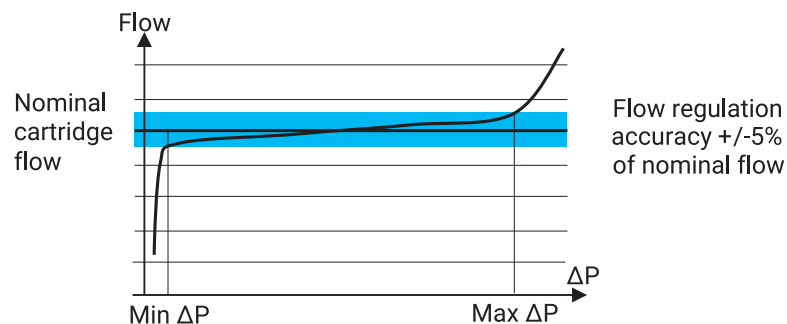
Straight DZR Brass Automatic Balancing Valve Fig. Anvil ABV-9900V Series

Cartridges

Cartridges are available in different ranges of working differential pressure. The minimum and maximum working ΔP therefore depends on the specific cartridge model.

A numeric code is marked on the cartridge body univocally identifying it (example for KRR992215.1880).

If installed, the test points allow to verify if the valve is actually working within the range suitable for the selected cartridge.



For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.



Straight DZR Brass Automatic Balancing Valve Fig. Anvil ABV-9900V Series

Cartridges

MINI: for ½" and ¾" L Valves

RWV Code	Flow		Range ΔP
	GPM	psi	
—			
KRR991202.1880	0.32	2.2-25	
KRR991203.1880	0.48	2.3-32	
KRR991204.1880	0.63	2.3-32	
KRR991205.1880	0.79	2.3-32	
KRR991206.1880	0.95	2.3-32	
KRR991207.1880	1.11	2.3-32	
KRR991208.1880	1.27	2.3-32	
KRR991209.1880	1.43	2.3-32	
KRR991210.1880	1.59	2.3-32	
KRR991211.1880	1.74	2.5-32	
KRR991212.1880	1.90	2.5-32	
KRR991213.1880	2.06	2.5-32	
KRR991214.1880	2.22	2.5-32	
KRR991215.1880	2.38	2.5-32	
KRR991216.1880	2.54	2.5-32	
KRR991218.1880	2.85	2.6-32	
KRR991220.1880	3.17	2.8-32	

SMALL : for ¾" and 1" Valves Standard Range

RWV Code	Flow		Range ΔP
	GPM	psi	
—			
KRR992213.1880	2.06	2.5-35	
KRR992215.1880	2.38	2.5-35	
KRR992217.1880	2.69	2.5-35	
KRR992219.1880	3.01	2.5-35	
KRR992221.1880	3.33	2.6-35	
KRR992224.1880	3.80	2.6-35	
KRR992227.1880	4.28	2.6-35	
KRR992230.1880	4.76	2.6-35	
KRR992233.1880	5.23	2.6-35	
KRR992236.1880	5.71	2.6-35	
KRR992240.1880	6.34	2.6-35	
KRR992245.1880	7.13	2.8-35	
KRR992250.1880	7.93	2.8-35	
KRR992255.1880	8.72	3.0-35	
KRR992260.1880	9.51	3.2-35	
KRR992266.1880	10.5	3.5-35	
KRR992272.1880	11.4	3.5-35	

SMALL: for ¾" and 1" Valves HP Range

RWV Code	Flow		Range ΔP
	GPM	psi	
—			
KRR992318.1880	2.85	4.2-64	
KRR992320.1880	3.17	4.6-64	
KRR992323.1880	3.65	4.8-64	
KRR992327.1880	3.96	4.8-64	
KRR992329.1880	4.60	4.8-64	
KRR992332.1880	5.07	4.8-64	
KRR992336.1880	5.71	4.8-64	
KRR992340.1880	6.34	4.8-64	
KRR992345.1880	7.13	4.8-64	
KRR992350.1880	7.93	4.8-64	
KRR992355.1880	8.72	4.9-64	
KRR992361.1880	9.67	5.2-64	
KRR992368.1880	10.80	5.2-64	
KRR992375.1880	11.90	5.2-64	
KRR992380.1880	12.70	5.2-64	
KRR992386.1880	13.60	5.8-64	
KRR992395.1880	15.10	5.8-64	

MEDIUM: for 1 ½", 1 ½" and 2" Valves Standard Range

RWV Code	Flow		Range ΔP
	GPM	psi	
—			
KRR994231.1880	4.91	1.9-33	
KRR994234.1880	5.39	1.9-33	
KRR994237.1880	5.86	1.9-33	
KRR994240.1880	6.34	2.0-33	
KRR994246.1880	7.29	2.0-33	
KRR994250.1880	7.93	2.0-33	
KRR994255.1880	8.72	2.0-33	
KRR994258.1880	9.19	2.0-33	
KRR994262.1880	9.83	2.0-33	
KRR994267.1880	10.60	2.2-33	
KRR994274.1880	11.70	2.2-33	
KRR994283.1880	13.20	2.2-33	
KRR994290.1880	14.30	2.2-33	
KRR994297.1880	15.40	2.2-33	
KRR994210.1880	16.60	2.2-33	
KRR994212.1880	19.00	2.2-33	
KRR994213.1880	20.60	2.3-33	
KRR994214.1880	22.80	2.5-33	
KRR994216.1880	24.70	2.5-33	
KRR994217.1880	26.60	2.6-33	
KRR994218.1880	28.50	2.8-33	
KRR994220.1880	31.10	2.8-33	

MEDIUM: for 1 ¼", 1 ½" and 2" Valves HP Range

RWV Code	Flow		Range ΔP
	GPM	psi	
—			
KRR994341.1880	6.50	3.8-61	
KRR994346.1880	7.29	3.8-61	
KRR994351.1880	8.08	3.8-61	
KRR994355.1880	8.72	3.9-61	
KRR994362.1880	9.83	3.9-61	
KRR994368.1880	10.80	3.9-61	
KRR994374.1880	11.70	3.9-61	
KRR994379.1880	12.50	3.9-61	
KRR994383.1880	13.20	3.9-61	
KRR994391.1880	14.40	4.1-61	
KRR994310.1880	15.90	4.1-61	
KRR994311.1880	17.60	4.1-61	
KRR994312.1880	19.00	4.2-61	
KRR994313.1880	20.60	4.2-61	
KRR994314.1880	22.00	4.2-61	
KRR994316.1880	26.00	4.4-61	
KRR994318.1880	27.70	4.5-61	
KRR994319.1880	30.10	4.5-61	
KRR994321.1880	32.70	4.6-61	
KRR994322.1880	35.40	4.9-61	
KRR994324.1880	38.00	5.1-61	
KRR994326.1880	41.20	5.5-61	

LARGE: for 2"H and 2 ½"L Valves

RWV Code	Flow		Range ΔP
	GPM	psi	
—			
KRR996216.1880	25.4	2.0-33	
KRR996218.1880	28.5	2.0-33	
KRR996220.1880	31.7	2.0-33	
KRR996222.1880	34.9	2.2-33	
KRR996224.1880	38.0	2.2-33	
KRR996227.1880	42.8	2.2-33	
KRR996230.1880	47.6	2.3-33	
KRR996233.1880	52.3	2.3-33	
KRR996236.1880	57.1	2.3-33	
KRR996240.1880	63.4	2.5-33	
KRR996245.1880	71.3	2.5-33	
KRR996250.1880	79.3	2.8-33	
KRR996255.1880	87.2	2.8-33	
KRR996260.1880	95.1	3.0-33	
KRR996266.1880	105.0	3.0-33	

Fixed Orifice Double Regulating Valve Fig. Anvil MBV-9510 Series



Features

Fixed orifice low lead DZR brass double regulating valve. Intended for HVAC and domestic water use. Threaded F/F (ASME B1.20.1 – NPT) or solder joint ends (ASME B16.22). Design according to BS7350. Tolerance on nominal C_v +3% (test according to BS7350). 300 WOG (Maximum 300psi up to 160°F. Maximum 150psi at 260°F.)

Available on following versions:

MBV-T-9517, threaded ends, with test points

MBV-S-9519, solder joint ends, with test points

Working Conditions:

- Water (15°F to 260°F)
below 32°F only for water with added anti-freezing fluid
over 212°F only for water with added anti-boiling fluid

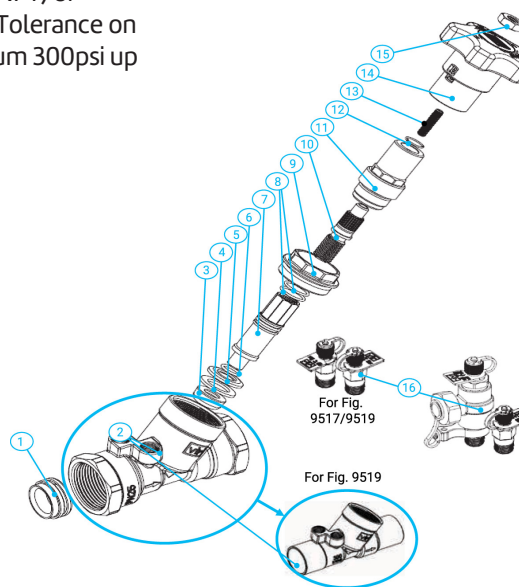
For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

Material Specifications

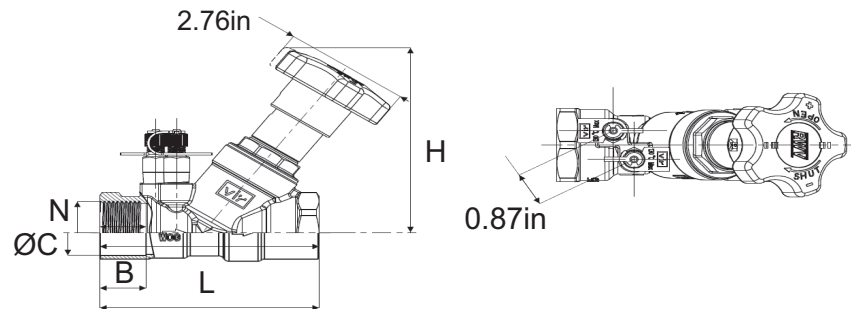
- 1. Venturi Insert:** Low Lead DZR Brass ASTM C27453
- 2. Body:** Low Lead DZR Brass ASTM C27453
- 3. Balancing Cone:** Low Lead DZR Brass ASTM C27453
- 4. Gasket Disc:** PTFE
- 5. Disc¹:** Low Lead DZR Brass ASTM C27453
- 6. Disc O-Ring¹:** EPDM Perox
- 7. Disc Stem:** Low Lead DZR Brass ASTM C27453
- 8. Stem O-Ring:** EPDM Perox
- 9. Union¹:** Low Lead DZR Brass ASTM C27453
- 10. Stem:** Brass ASTM B124 C37700
- 11. Bonnet:** Low Lead DZR Brass ASTM C27453
- 12. Stop Spring Ring:** Spring Steel
- 13. Screw:** Steel
- 14. Handwheel:** ABS (Blue)
- 15. Nut:** Zinc Plated Steel
- 16. Test Point:** DZR Brass² ASTM C35330

¹ Only on 1 1/4", 1 1/2" and 2"

² Test points with EPDM gaskets and polypropylene ties



Fixed Orifice Double Regulating Valve Fig. Anvil MBV-9510 Series



Fixed Orifice Double Regulating Valve

Valve Size	N	ØC ¹	H	L ²	B ²	Approx. Wt. ² Each	Flow Range
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg	GPM
U-½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14.0	1.23/1.16 0.56/0.53	0.27-0.71 –
L-½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14.0	1.23/1.16 0.56/0.53	0.49-1.17 –
½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14.0	1.23/1.16 0.56/0.53	0.98-2.35 ³ –
¾ 20	¾ - 14 –	0.877-0.881 22.28-22.38	4.06 103.1	3.78/4.18 96.0/106.2	0.75/0.76 19.1/19.3	1.43/1.34 0.65/0.61	2.19-5.15 ³ –
1 25	1 - 11.5 –	1.128-1.131 28.65-28.73	4.06 103.1	3.94/4.57 100.1/116.1	0.89/0.92 22.6/23.4	1.73/1.55 0.78/0.70	4.09-9.56 ³ –
1¼ 32	1¼ - 11.5 –	1.378-1.381 35.00-35.08	4.06 103.1	4.63/5.28 117.6/134.1	0.98/0.98 24.9/27.9	2.78/2.53 1.26/1.15	8.56-19.81 ³ –
1½ 40	1½ - 11.5 –	1.628-1.632 41.35-41.45	4.06 103.1	5.00/5.90 127.0/149.9	0.98/1.10 24.9/27.9	3.50/3.16 1.59/1.43	12.84-29.80 ³ –
2 50	2 - 11.5 –	2.128-2.132 54.05-54.15	4.06 103.1	5.72/6.73 145.3/170.9	1.15/1.35 29.2/34.3	4.80/4.46 2.18/2.02	24.09-55.63 ³ –

¹ Tolerance field

² Threaded ends/soldering ends

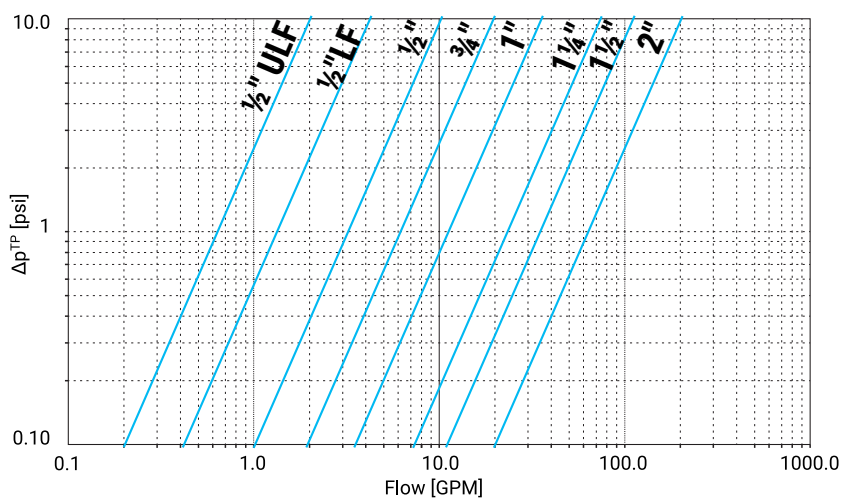
³ Dimension with VIR actuators, for more details please consult specific technical sheet ⁴
Suggested flow range applicability (BS7350)

If used with measuring manometers different from those proposed by Anvil-RWV, please verify that sensibility of the measuring device is compatible with indicated minimum.

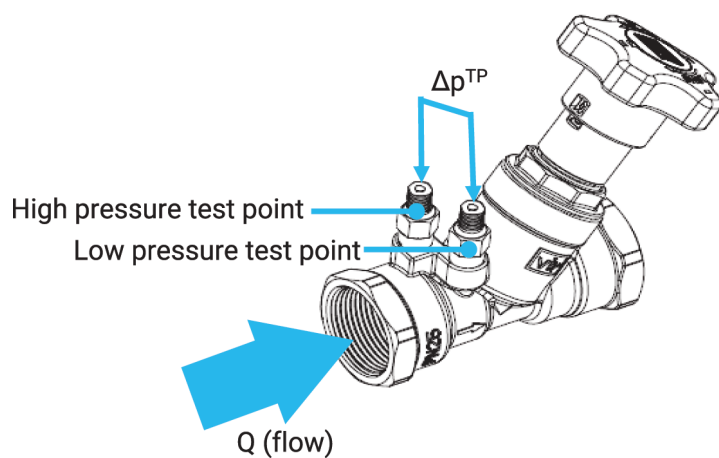
For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

Fixed Orifice Double Regulating Valve Fig. Anvil MBV-9510 Series

Flow Diagram



1/2" ULF	C _{vs} venturi	0.64
1/2" LF	C _{vs} venturi	1.33
1/2"	C _{vs} venturi	3.24
3/4"	C _{vs} venturi	6.16
1"	C _{vs} venturi	11.24
1 1/4"	C _{vs} venturi	23.41
1 1/2"	C _{vs} venturi	34.95
2"	C _{vs} venturi	63.67



$$Q = C_{vs}^{venturi} \cdot \sqrt{\Delta p^{TP}}$$

Q = flow rate in GPM

Δp = differential pressure signal in psi generated through the pressure test points

C_{vs} = flow coefficient

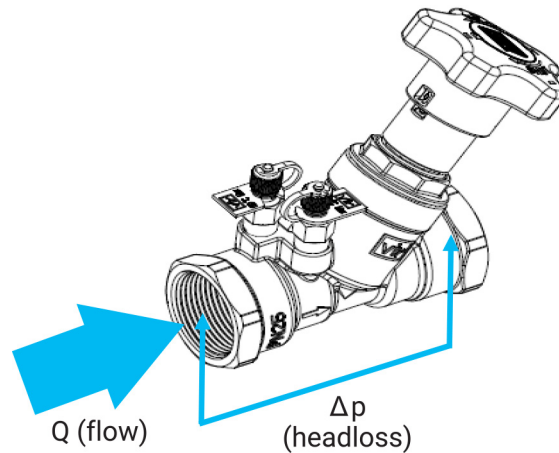
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Fixed Orifice Double Regulating Valve Fig. Anvil MBV-9510 Series

Headloss

$$\Delta p = \left(\frac{Q}{C_v} \right)^2$$

Formula linking flow Q (in GPM) and theoretical valve headloss (pressure drop) Δp (in psi). C_v depends on handwheel position as indicated in table.

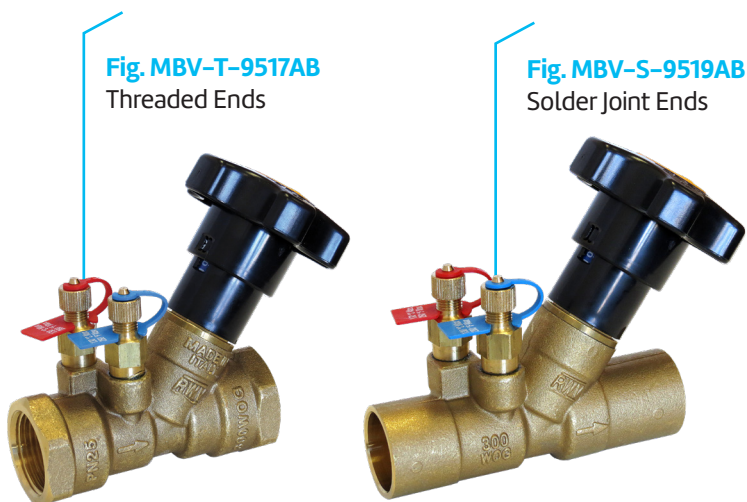


Headloss Calculation

Handwheel Position	C_v (GPM/psi ^{0.5})							
	U-1/2"	L-1/2"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
–	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi
0.5	0.177	0.160	0.474	0.474	1.70	2.96	3.14	6.20
0.7	0.206	0.186	0.474	0.543	2.00	3.38	3.61	7.56
1.0	0.283	0.287	0.613	0.671	2.42	3.95	4.27	9.65
1.3	0.331	0.394	0.717	0.809	2.82	4.49	4.96	12.19
1.5	0.355	0.440	0.809	0.902	3.12	4.83	5.57	14.30
1.7	0.387	0.501	0.902	0.994	3.48	5.25	6.60	16.64
2.0	0.445	0.586	0.994	1.12	4.13	6.27	8.99	20.17
2.3	0.511	0.669	1.10	1.25	4.83	7.82	12.08	23.35
2.5	0.517	0.696	1.18	1.39	5.28	9.16	14.21	25.12
2.7	0.527	0.743	1.32	1.62	5.63	10.46	16.34	26.66
3.0	0.563	0.828	1.60	2.24	6.09	12.21	18.89	28.72
3.3	0.578	0.864	1.88	2.94	6.49	13.39	20.67	30.57
3.5	0.594	0.891	2.03	3.39	6.64	13.94	21.54	31.72
3.7	0.595	0.925	2.12	3.75	6.80	14.34	22.16	32.86
4.0	0.603	0.953	2.19	4.06	7.10	14.50	22.65	34.36
4.4	0.605	0.985	2.22	4.24	7.21	–	–	–

For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

Fixed Orifice Double Regulating Low Lead Valves Fig. Anvil MBV-9510AB Series



Features

Fixed orifice low lead DZR brass double regulating valve. Intended for HVAC and domestic water use. Threaded F/F (ASME B1.20.1 – NPT) or solder joint ends (ASME B16.22). Design according to BS7350. Tolerance on nominal $C_v \pm 3\%$ (test according to BS7350). 300 WOG (Maximum 300psi up to 160°F. Maximum 150psi at 260°F.)

Available on following versions:

MBV-T-9517AB, threaded ends, with test points

MBV-S-9519AB, solder joint ends, with test points

Working Conditions:

- Water (15°F to 260°F)
below 32°F only for water with added anti-freezing fluid
over 212°F only for water with added anti-boiling fluid

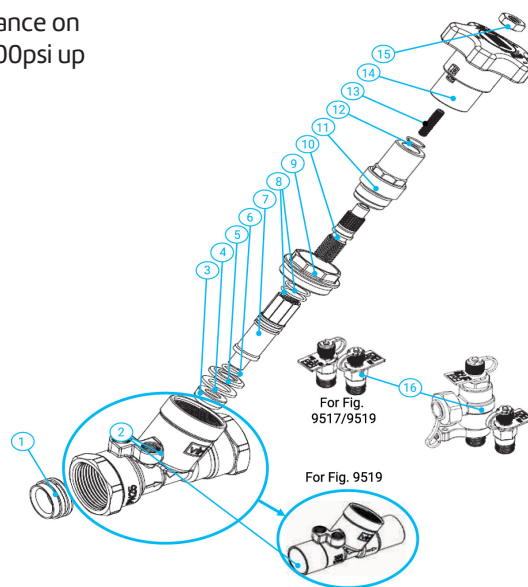
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Material Specifications

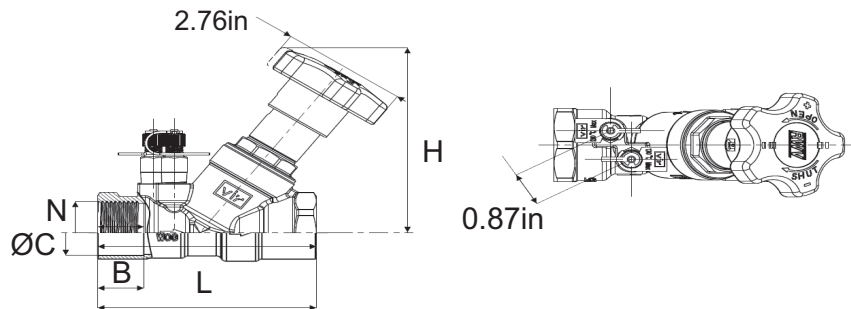
- 1. Venturi Insert:** Low Lead DZR Brass ASTM C27453
- 2. Body:** Low Lead DZR Brass ASTM C27453
- 3. Balancing Cone:** Low Lead DZR Brass ASTM C27453
- 4. Gasket Disc:** PTFE
- 5. Disc¹:** Low Lead DZR Brass ASTM C27453
- 6. Disc O-Ring¹:** EPDM Perox
- 7. Disc Stem:** Low Lead DZR Brass ASTM C27453
- 8. Stem O-Ring:** EPDM Perox
- 9. Union¹:** Low Lead DZR Brass ASTM C27453
- 10. Stem:** Brass ASTM B124 C37700
- 11. Bonnet:** Low Lead DZR Brass ASTM C27453
- 12. Stop Spring Ring:** Spring Steel
- 13. Screw:** Steel
- 14. Handwheel:** ABS (Blue)
- 15. Nut:** Zinc Plated Steel
- 16. Test Point:** DZR Brass² ASTM C35330

¹ Only on 1 1/4", 1 1/2" and 2"

² Test points with EPDM gaskets and polypropylene ties



Fixed Orifice Double Regulating Low Lead Valves Fig. Anvil MBV-9510AB Series



Fixed Orifice Double Regulating Low Lead Valves

Valve Size	N	ØC ¹	H	L ²	B ²	Approx. Wt. ² Each	Flow Range
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg	GPM
U-½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14.0	1.23/1.16 0.56/0.53	0.27-0.71 –
L-½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14.0	1.23/1.16 0.56/0.53	0.49-1.17 –
½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14.0	1.23/1.16 0.56/0.53	0.98-2.35 ³ –
¾ 20	¾ - 14 –	0.877-0.881 22.28-22.38	4.06 103.1	3.78/4.18 96.0/106.2	0.75/0.76 19.1/19.3	1.43/1.34 0.65/0.61	2.19-5.15 ³ –
1 25	1 - 11.5 –	1.128-1.131 28.65-28.73	4.06 103.1	3.94/4.57 100.1/116.1	0.89/0.92 22.6/23.4	1.73/1.55 0.78/0.70	4.09-9.56 ³ –
1¼ 32	1¼ - 11.5 –	1.378-1.381 35.00-35.08	4.06 103.1	4.63/5.28 117.6/134.1	0.98/0.98 24.9/27.9	2.78/2.53 1.26/1.15	8.56-19.81 ³ –
1½ 40	1½ - 11.5 –	1.628-1.632 41.35-41.45	4.06 103.1	5.00/5.90 127.0/149.9	0.98/1.10 24.9/27.9	3.50/3.16 1.59/1.43	12.84-29.80 ³ –
2 50	2 - 11.5 –	2.128-2.132 54.05-54.15	4.06 103.1	5.72/6.73 145.3/170.9	1.15/1.35 29.2/34.3	4.80/4.46 2.18/2.02	24.09-55.63 ³ –

¹ Tolerance field

² Threaded ends/soldering ends

³ Dimension with VIR actuators, for more details please consult specific technical sheet ⁴ Suggested flow range applicability (BS7350)

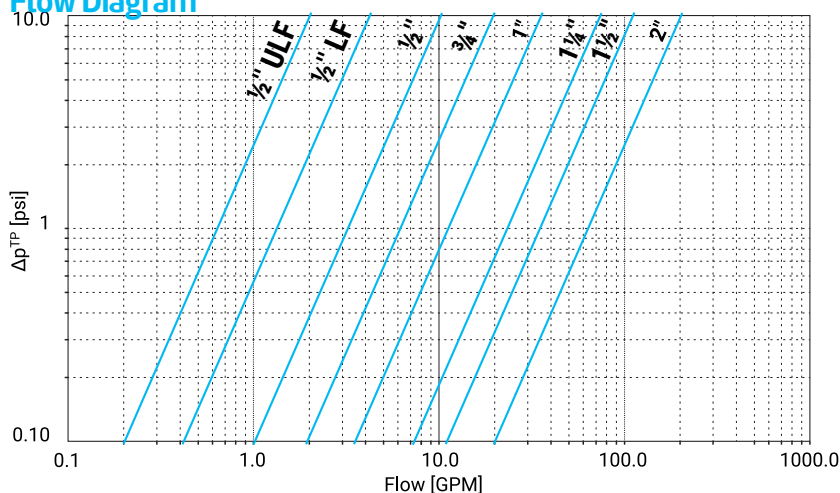
If used with measuring manometers different from those proposed by Anvil-RWV, please verify that sensibility of the measuring device is compatible with indicated minimum.

For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

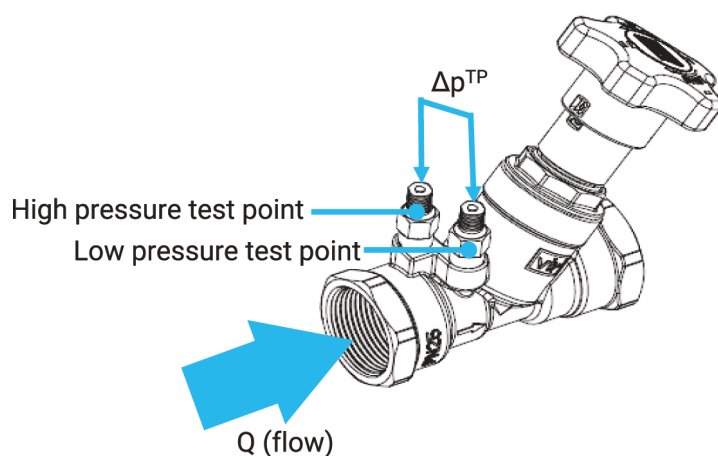
Fixed Orifice Double Regulating Low Lead Valves

Fig. Anvil MBV-9510AB Series

Flow Diagram



1/2" ULF	C _{vs} venturi	0.64
1/2" LF	C _{vs} venturi	1.33
1/2"	C _{vs} venturi	3.24
3/4"	C _{vs} venturi	6.16
1"	C _{vs} venturi	11.24
1 1/4"	C _{vs} venturi	23.41
1 1/2"	C _{vs} venturi	34.95
2"	C _{vs} venturi	63.67



$$Q = C_{vs}^{venturi} \cdot \sqrt{\Delta p^{TP}}$$

Q = flow rate in GPM

Δp = differential pressure signal in psi generated through the pressure test points

C_{vs} = flow coefficient

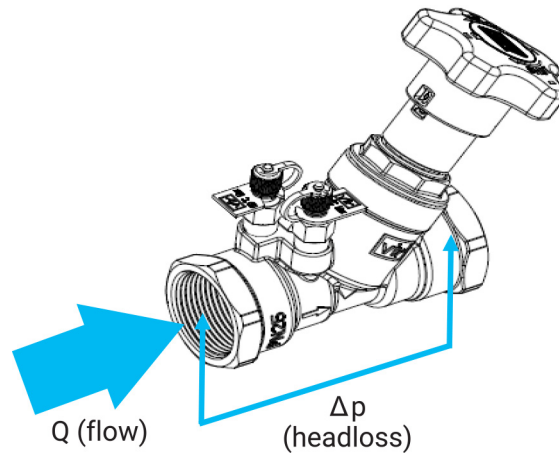
For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

Fixed Orifice Double Regulating Low Lead Valves Fig. Anvil MBV-9510AB Series

Headloss

$$\Delta p = \left(\frac{Q}{C_v} \right)^2$$

Formula linking flow Q (in GPM) and theoretical valve headloss (pressure drop) Δp (in psi). C_v depends on handwheel position as indicated in table.



Headloss Calculation

Handwheel Position	C_v (GPM/psi ^{0.5})							
	U-1/2"	L-1/2"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
–	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi	GPM/psi
0.5	0.177	0.160	0.474	0.474	1.70	2.96	3.14	6.20
0.7	0.206	0.186	0.474	0.543	2.00	3.38	3.61	7.56
1.0	0.283	0.287	0.613	0.671	2.42	3.95	4.27	9.65
1.3	0.331	0.394	0.717	0.809	2.82	4.49	4.96	12.19
1.5	0.355	0.440	0.809	0.902	3.12	4.83	5.57	14.30
1.7	0.387	0.501	0.902	0.994	3.48	5.25	6.60	16.64
2.0	0.445	0.586	0.994	1.12	4.13	6.27	8.99	20.17
2.3	0.511	0.669	1.10	1.25	4.83	7.82	12.08	23.35
2.5	0.517	0.696	1.18	1.39	5.28	9.16	14.21	25.12
2.7	0.527	0.743	1.32	1.62	5.63	10.46	16.34	26.66
3.0	0.563	0.828	1.60	2.24	6.09	12.21	18.89	28.72
3.3	0.578	0.864	1.88	2.94	6.49	13.39	20.67	30.57
3.5	0.594	0.891	2.03	3.39	6.64	13.94	21.54	31.72
3.7	0.595	0.925	2.12	3.75	6.80	14.34	22.16	32.86
4.0	0.603	0.953	2.19	4.06	7.10	14.50	22.65	34.36
4.4	0.605	0.985	2.22	4.24	7.21	–	–	–

For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

DZR Brass On/Off Terminal Low Lead Balancing Valves Fig. Anvil CSV-9520AB Series



Features

Low lead brass ON/OFF terminal balancing valve for HVAC and domestic water use. Threaded F/F (ASME B1.20.1 – NPT) or solder joint ends (ASME B16.22). Tolerance on nominal C_v for fully open valve + 10% (test according to BS7350). 300 WOG (Maximum 300psi up to 160°F. Maximum 150 psi at 260°F.)

Available on following versions:

CSV-T-9527AB threaded ends

CSV-S-9529AB solder joint ends

Provided with mounted test points. With threaded M30x1.5 connection for linear actuator (Vaurien)

Working Conditions:

- Water (15°F to 260°F) below 32°F only for water with added anti-freezing fluids over 212°F only for water with added anti-boiling fluid

For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

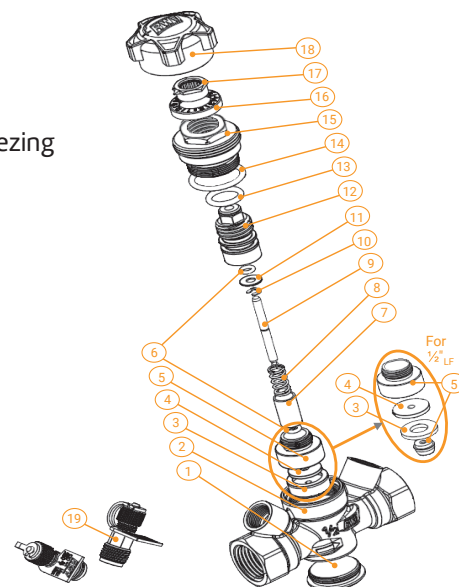
Material Specifications

1. **Plug:** CW510L
2. **Body:** CW510L
3. **Disc Gasket:** EPDM Perox
4. **Gasket Washer¹:** CW510L
5. **Balance Disc²:** CW510L
6. **Stem O-Ring:** EPDM Perox
7. **Spring Cartridge:** Brass
8. **Spring:** Stainless Steel
9. **Disc Stem:** Stainless Steel
10. **Stop Ring:** Stainless Steel
11. **Washer:** Brass
12. **Balancing Stem:** CW510L
13. **Balancing Stem O-Ring:** EPDM Perox
14. **Bonnet O-Ring:** EPDM Perox
15. **Bonnet:** CW510L
16. **Graduated Scale:** Blue Polypropylene
17. **Reg. Indicator:** Orange Polyamide
18. **On/Off Cap:** Blue Polyamide
19. **Test Point/Plug:** DZR Brass³

¹ Clamped to stem for 1/2"/3/4", with brass threaded washer for 1".

² In two parts (disc + cone) for 1/2" LF

³ Plug with copper gaskets. Test points with EPDM Perox gaskets and polypropylene ties.



DZR Brass On/Off Terminal Low Lead Balancing Valves Fig. Anvil CSV-9520AB Series

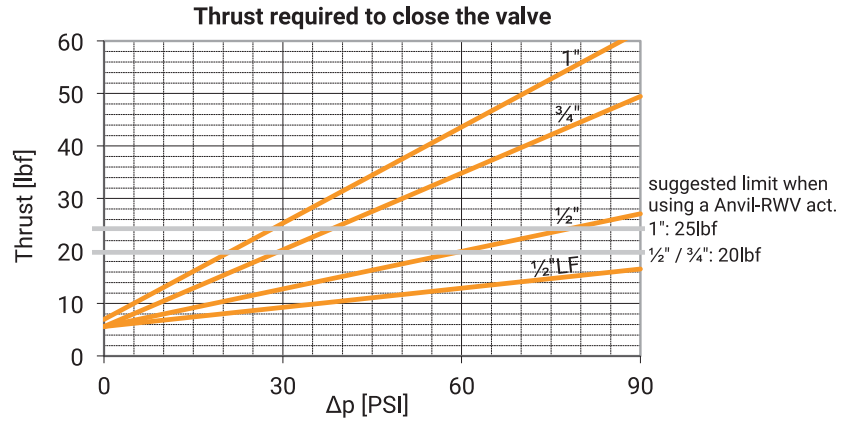
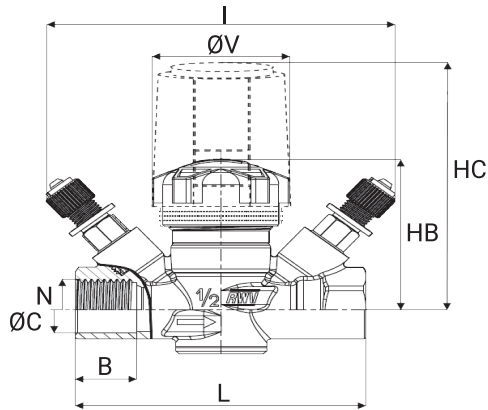


Fig. Anvil CSV-9520AB Series DZR Brass On/Off Terminal Balancing Valve

Valve Size	N	ØC ¹	L ²	B ²	HB	HC ³	ØV	I	Approx. Wt. Each	Flow Range
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg	GPM
1/2 LF	1/2 - 14	0.627-0.631	3.3/3.9	0.65/0.51	2.0	3.3	1.6	3.9	0.77/0.74	0.49/1.17
15	—	15.93-16.03	83.8/99.1	16.5/13.0	50.8	83.8	40.6	99.1	0.35/0.34	—
1/2	1/2 - 14	0.627-0.631	3.3/3.9	0.65/0.51	2.0	3.3	1.6	3.9	0.77/0.74	0.98/2.35 ⁴
15	—	15.93-16.03	83.8/99.1	16.5/13.0	50.8	83.8	40.6	99.1	0.35/0.34	—
3/4	3/4 - 14	0.877-0.881	3.5/4.6	0.76/0.78	2.0	3.3	1.6	4.1	0.99/0.99	2.19/5.15 ⁴
20	—	22.28-22.38	88.9/116.8	19.3/19.8	50.8	83.8	40.6	104.1	0.45/0.45	—
1	1 - 11.5	1.128-1.131	3.9/5.0	0.90/0.92	2.8	4.3	1.6	4.3	1.37/1.27	4.09/9.56 ⁴
25	—	28.65-28.73	99.1/127.0	22.9/23.4	71.1	109.2	40.6	109.2	0.62/0.58	—

¹Tolerance field

²Threaded ends/soldering ends

³Dimension with VIR actuators, for more details please consult specific technical sheet

If using a measuring manometer different from those proposed by Anvil-RWV, please verify that sensibility of the measuring device is compatible with indicated minimum flow (see flow measurement paragraph).

DZR Brass On/Off Terminal Low Lead Balancing Valves Fig. Anvil CSV-9520AB Series

$$Q = C_v \cdot \sqrt{\Delta p^{TP}}$$

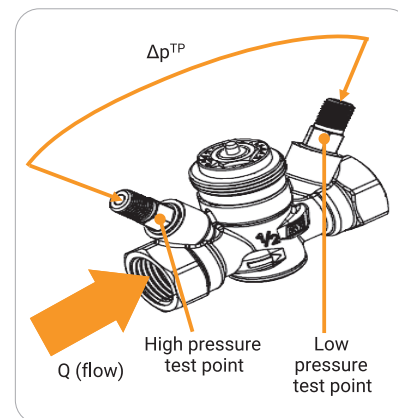
Flow Measurement

Formula linking flow Q (in GPM) and Δp measured at test points (in psi).

C_v depends on regulating position as indicated in table.

Minimum flow that can be measured for each diameter may be calculated by using in the formula minimum Δp that can be measured by used manometer.

Valves are anyway designed for best performances when used on range previously suggested.



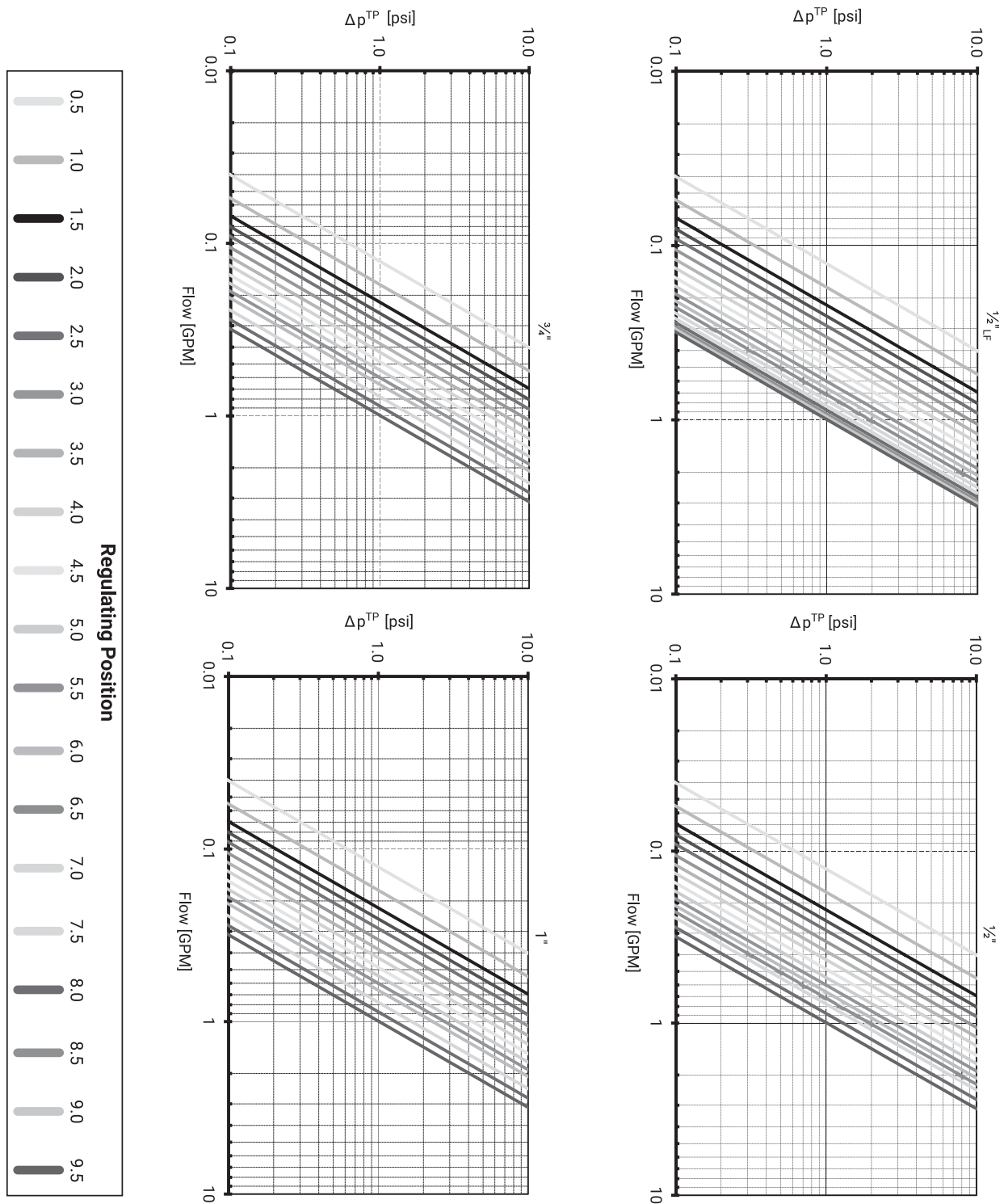
Flow Measurement

Regulating Position	C_v			
	1/2" LF	1/2"	3/4"	1"
-	GPM/psi	GPM/psi	GPM/psi	GPM/psi
0.5	0.127	0.578	0.798	1.538
1.0	0.173	0.879	1.237	2.405
1.5	0.220	1.098	1.584	3.121
2.0	0.254	1.260	1.896	3.665
2.5	0.289	1.399	2.197	4.162
3.0	0.335	1.514	2.451	4.509
3.5	0.382	1.607	2.671	4.844
4.0	0.428	1.699	2.856	5.226
4.5	0.486	1.769	3.017	5.491
5.0	0.543	1.838	3.179	5.723
5.5	0.601	1.884	3.306	5.942
6.0	0.659	1.931	3.422	6.127
6.5	0.717	1.965	3.526	6.312
7.0	0.775	2.000	3.619	6.555
7.5	0.832	2.035	3.700	6.740
8.0	0.879	2.058	3.792	6.937
8.5	0.925	2.081	3.873	7.087
9.0	0.960	2.104	3.942	7.145
9.5	0.994	2.116	4.012	7.283

For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

DZR Brass On/Off Terminal Low Lead Balancing Valves

Fig. Anvil CSV-9520AB Series



For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

DZR Brass On/Off Terminal Low Lead Balancing Valves Fig. Anvil CSV-9520AB Series

$$\Delta p = \left(\frac{Q}{C_v} \right)^2$$

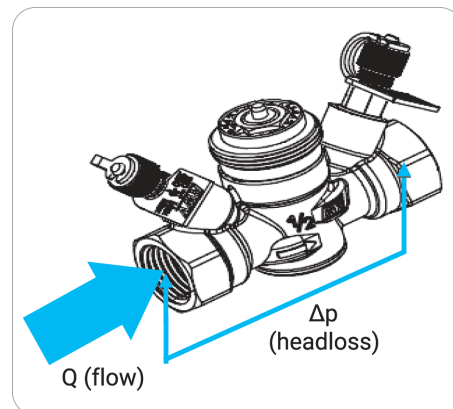
Headloss Calculation

Formula linking flow Q (in GPM) and theoretical valve headloss (pressure drop) Δp (in psi). C_v depends on regulating position as indicated in table.

Headloss Calculation

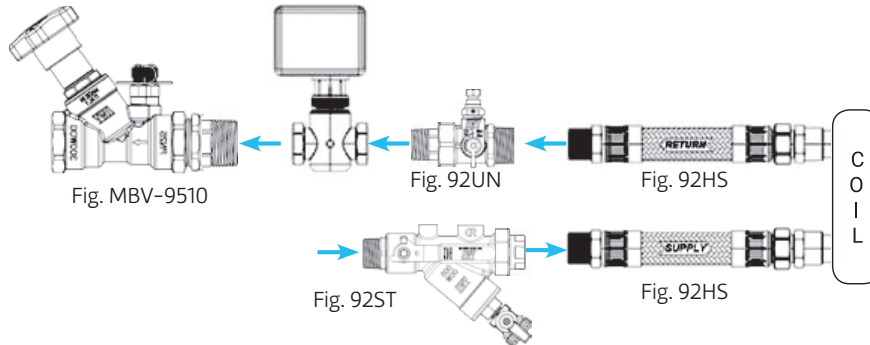
Regulating Position	C_v (GPM/psi ^{0.5})			
	1/2" LF	1/2"	3/4"	1"
–	GPM/psi	GPM/psi	GPM/psi	GPM/psi
0.5	0.127	0.578	0.798	1.538
1.0	0.173	0.879	1.237	2.405
1.5	0.22	1.098	1.584	3.121
2.0	0.254	1.26	1.896	3.665
2.5	0.289	1.399	2.197	4.162
3.0	0.335	1.514	2.451	4.509
3.5	0.382	1.607	2.671	4.844
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6.5	0.717	1.965	3.526	6.312
7.0	0.775	2.000	3.619	6.555
7.5	0.832	2.035	3.700	6.74
8.0	0.879	2.058	3.792	6.937
8.5	0.925	2.081	3.873	7.087
9.0	0.960	2.104	3.942	7.145
9.5	0.994	2.116	4.012	7.283

For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.



Standard Coil Hook Up Kit Configurations Fig. M2W

Manual 2-Way



Ordering Options

Supply/Return Line Size

1/2"	3/4"	1"
1 1/4"	1 1/2"	2"



Supply/Return Connection

FNPT	Sweat
Press	PEX (F-1960)

Coil Connection Size

3/8"	1/2"	3/4"	1"
1 1/4"	1 1/2"	2"	



Coil Connection

FNPT	MNPT
Sweat	

Note: For copper connection
Male / Sweat / "L" type copper
7/8" O.D. = 3/4"
5/8" O.D. = 1/2"
1/2" O.D. = 3/8"

TCV Connection Size

1/2"	3/4"	1"
1 1/4"	1 1/2"	2"



TCV Connection

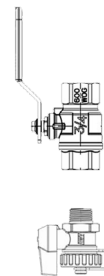
MNPT
Sweat

Hoses

No	12"	18"
	24"	36"

Drain Valve

No



Stem Extensions/PT Port Extensions

No	Yes
----	-----

Insulations (for balancing valve only)

No	Yes
----	-----

5080B

241DV 1/4"
241DV 3/8"
241DV 1/2"

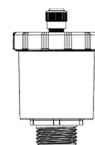
Design Flow

Balancing Valve Size	Recommended (GPM)	
	Min	Max
1/2" X	0.12	0.36
1/2" U	0.27	0.71
1/2" L	0.49	1.17
1/2"	0.98	2.35
3/4"	2.19	5.15
1"	4.09	9.58
1 1/4"	8.56	19.81
1 1/2"	12.84	29.80
2"	24.09	55.63

Automatic Air Vent

No

9390N 1/4"
9390N 3/8"
9390N 1/2"



Multiple configurations available.
Product will be seal packed and labeled per the mechanical schedule provided.
For additional information on Gruvlok bag and tag coil kit service, contact an ASC Engineered Solutions Representative.

Standard Coil Hook Up Kit Configurations Fig. M2W

Component Information

92ST	Combination ball valve / Y-strainer with blow down valve and P/T port, Full Port, DZR brass body, Chrome plated brass ball, 20 mesh SS screen, 400# WOG, 260° F
92HS	Flexible Hoses, MNPT fixed end x swivel end, EPDM core, SS Braided, EPDM gaskets, 350# WOG (300# WOG for 1 1/2" - 2"), 250° F
92UN	Union with manual air vent and P/T port, DZR brass body, EPDM o-ring, 400# WOG, 260° F
MBV-9510	Static Balancing Valve, fixed orifice, with Venturi insert, integral memory stop, FNPT ends, DZR Brass, 300# WOG, 260° F
92MU	Union, DZR Brass, EPDM O-ring, 400# WOG, 260° F

Flow Range

Balancing Valve Size	Recommended (GPM)	
	Min	Max
1/2" X	0.12	0.36
1/2" U	0.27	0.71
1/2" L	0.49	1.17
1/2"	0.98	2.35
3/4"	2.19	5.15
1"	4.09	9.58
1 1/4"	8.56	19.81
1 1/2"	12.84	29.80
2"	24.09	55.63

Balancing Valves GBV-A

**Ductile Iron ASTM A536,
Grade 65-45-12**



Straight Shown

Material Specifications

Body, Bonnet

Ductile Iron ASTM A536, Grade 65-45-12

Stem & Disc

Brass Alloy B16

Elastomers

EPDM

Handwheel

Reinforced Nylon; ABS

The Series GBV is a multi-turn, Y-style globe valve designed for accurate determination and control of fluid flow to circuits requiring precise balancing.

Maximum Working Pressure:

300 PSI / 20.7 bar (PN20)

Max. Working Temperature:

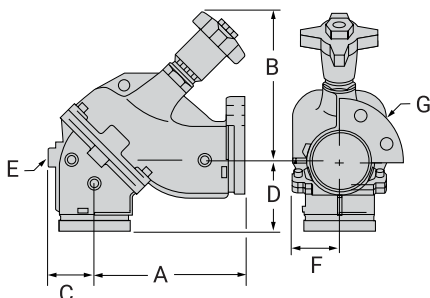
230°F (110°C)

Features & Benefit

- Pressure differential ports on both sides of the valve
- Convertible design, straight to 90° angle by removing and replacing four set screws
- Positive shutoff for equipment servicing
- Multi-turn adjustment
- Ergonomically designed handwheel
- Micrometer type adjustment scale
- Tamper-proof hidden memory stop

Balancing Valves GBV-A

2 1/2" to 12" Ductile Iron, Grooved-End or Flanged-End Angle



Ductile Iron, Grooved-End or Flanged-End Angle

Nominal Size	O.D.	A	B Open	C	D	E	F	Flange Diameter		Approx. Wt. Each
								G Flange 125#	G Flange 250#	
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 1/2 65	2.875 73.0	7 3/8 187	9 5/8 244	2 3/4 70	4 5/8 117	1 25	2 9/16 65	7 178	7 1/2 191	25 11.3
3 80	3.500 88.9	8 3/16 213	10 1/2 267	2 7/16 61	3 7/8 98	1 25	3 76	7 1/2 191	8 1/4 210	28 12.7
4 100	4.500 114.3	9 5/8 244	10 9/16 268	3 76	4 3/8 111	1 1/4 32	3 7/16 87	9 1/4 235	10 254	41 18.6
5 125	5.563 141.3	12 305	13 1/16 331	3 5/8 92	5 1/2 140	1 1/4 32	4 15/16 125	10 254	11 279	90 40.8
6 150	6.625 168.3	14 1/8 359	13 3/4 349	4 7/16 112	6 5/8 168	2 51	5 7/8 149	11 279	12 1/2 318	130 59.0
8 200	8.625 219.1	18 5/16 481	24 5/8 625	5 11/16 144	9 3/16 233	2 1/4 57	7 7/8 200	13 1/2 343	15 381	310 140.6
10 250	10.750 273.1	20 5/16 515	26 1/2 673	6 9/16 166	9 3/4 248	2 1/4 57	9 15/32 240	16 406	17 1/2 445	460 208.7
12 300	12.750 323.9	24 1/16 611	28 7/16 722	7 5/8 194	14 356	2 1/4 57	12 5/8 321	19 483	20 1/2 521	870 394.6

Note: Grooved-Ends are for connection of components with dimensions conforming to Gruvlok® standard grooved Specifications for IPS pipe. See www.asc-es.com for installation instructions and flow data.

Balancing Valves GBV-G

**Ductile Iron ASTM A536,
Grade 65-45-12**



Straight Shown

Material Specifications

Body, Bonnet

Ductile Iron ASTM A536, Grade 65-45-12

Stem & Disc

Brass Alloy B16

Elastomers

EPDM

Handwheel

Reinforced Nylon; ABS

The Series GBV is a multi-turn, Y-style globe valve designed for accurate determination and control of fluid flow to circuits requiring precise balancing.

Maximum Working Pressure:

300 PSI / 20.7 bar (PN20)

Max. Working Temperature:

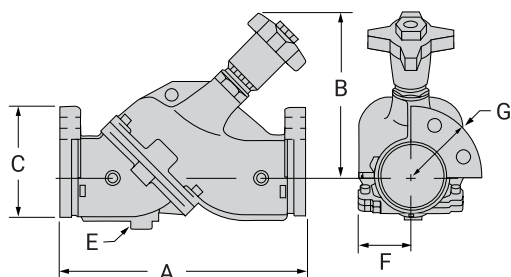
230°F (110°C)

Features & Benefit

- Pressure differential ports on both sides of the valve
- Convertible design, straight to 90° angle by removing and replacing four set screws
- Positive shutoff for equipment servicing
- Multi-turn adjustment
- Ergodynamically designed handwheel
- Micrometer type adjustment scale
- Tamper-proof hidden memory stop

Balancing Valves GBV-G

2 1/2" to 12" Ductile Iron, Grooved-End or Flanged-End Straight



Ductile Iron, Grooved-End or Flanged-End Straight

Nominal Size	O.D.	A	B Open	C	E	F	Flange Diameter		Approx. Wt. Each
							G Flange 125#	G Flange 250#	
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 1/2 65	2.875 73.0	12 305	9 5/8 244	2 3/4 70	1 25	2 9/16 65	7 178	7 1/2 191	25 11.3
3 80	3.500 88.9	12 305	10 1/2 267	2 7/16 61	1 25	3 76	7 1/2 191	8 1/4 210	28 12.7
4 100	4.500 114.3	14 356	10 9/16 268	3 76	1 1/4 32	3 7/16 87	9 1/4 235	10 254	41 18.6
5 125	5.563 141.3	17 1/2 445	13 1/16 331	3 5/8 92	1 1/4 32	4 15/16 125	10 254	11 279	90 40.8
6 150	6.625 168.3	20 11/16 525	13 3/4 349	4 7/16 112	2 51	5 7/8 149	11 279	12 1/2 318	130 59.0
8 200	8.625 219.1	28 3/16 716	24 5/8 625	5 11/16 144	2 1/4 57	7 7/8 200	13 1/2 343	15 381	310 140.6
10 250	10.750 273.1	30 762	26 1/2 673	6 9/16 166	2 1/4 57	9 15/32 240	16 406	17 1/2 445	460 208.7
12 300	12.750 323.9	38 1/16 966	28 7/16 722	7 5/8 194	2 1/4 57	12 5/8 321	19 483	20 1/2 521	870 394.6

Note: Grooved-Ends are for connection of components with dimensions conforming to Gruvlok® standard grooved Specifications for IPS pipe.

Circuit Balancing Valves Model CB800



Material Specifications

Body

Grooved or Flanged Connection: Cast Iron

Stem

Dezincification resistant brass

Valve Disc

Bronze

O-Ring

EPDM

Handwheel

Thermoplastic

For accessories and replacement parts contact an ASC Engineered Solutions Sales Representative for details.

Model CB800 Circuit Balancing Valves are designed to achieve accurate and efficient balancing of hydronic heating or cooling systems. Circuit Balancing Valves provide superior accuracy in measuring flows rather than ball type circuit setters.

The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff

These valves are rated at 300 psi (20.7 bar) at 300 °F (150°C). Flanged (125#) and grooved connections are available for sizes 2½" – 12" (65mm – 300mm) with cast iron bodies.

The Y-Pattern style provides low pressure drop. The globe style valve allows for precise throttling. The easy-to-adjust digital/vernier handwheel provides a minimum of 70 unique handwheel positions. The handwheel and test ports are located on one side for easy access. A built-in memory stop ensures the setting can be returned to a balanced position after shutoff. The self-sealing pressure/temperature test ports use standard insertion probes to eliminate additional components.

The Gruvlok® Circuit Balancing Valve is installed with flow in the direction of the arrow, and may be in the horizontal or vertical position. The handwheel can be positioned up or down, or on either side.

Maximum Working Pressure: 300 psi (20.7 bar) Grooved Connection
235 psi (16.0 bar) Flanged Connection

Circuit Balancing Valves Model CB800

Valve Sizing

All balancing valves are sized to perform in a normal operation range between 25% and 100% of the full open position, at a minimum differential pressure between 1 – 3 ft. (0.3m – 0.9m) of water. It is recommended that for improved accuracy, the valve is set to open 70%+.

When maximum flow is known but a pressure drop through the balancing valve is unknown, select a balancing valve for a maximum pressure drop of 2 ft. (0.6m) water 0.8 psi (0.06 bar) in the full open position as shown in the table to the right.

Accurate flow measurement requires that the velocity distribution near the balancing valve remains constant, regardless of the total flow through the pipe. Fittings, such as elbows and tees, disturb the normal flow profile which

is established through straight pipe. Pumps create even greater disturbances. Failure to allow water flows around fittings and pumps to normalize can affect measuring accuracy by as much as 20% when the valve is in the fully open position. Minimum lengths (diameters, D) of straight pipe before and after the balancing valve prevent these errors.

Valves are designed for vertical, horizontal, or inclined installation.

CB800 Circuit Balancing Valves

Valve Size	Flow Rate	Connection Type
In./mm	GPM/LPM	-
2½ 65	39 - 106 10.30 - 28.01	Flanged or Grooved
76.1mm 65	39 - 106 10.30 - 28.01	
3 80	60 - 132 15.85 - 34.87	
4 100	100 - 217 26.42 - 57.33	
139.7mm 125	112 - 317 29.59 - 83.75	
5 125	112 - 317 29.59 - 83.75	
165.1mm 150	220 - 437 58.12 - 115.46	
6 150	220 - 437 58.12 - 115.46	
8 200	223 - 881 58.92 - 232.76	
10 250	292 - 1298 77.15 - 342.93	
12 300	616 - 1731 162.75 - 457.33	

Circuit Balancing Valves – Grooved Ends Model CB800

The Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems.

The Gruvlok Groove-by-Groove Model CB800 Valve, available sizes 2½" to 12" (65 to 300mm), is composed of cast iron.

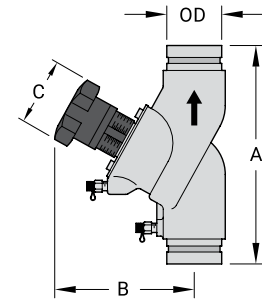
The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff

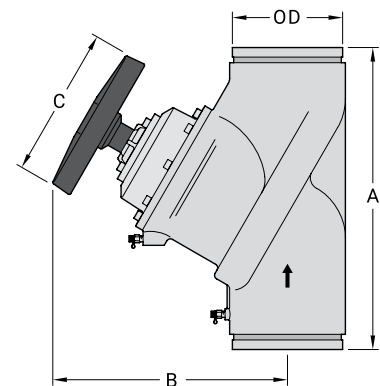
CB800 Circuit Balancing Valves – Grooved Ends

Valve Size	O.D.	Dimensions			Approx. Wt. Ea.	Limits	Handwheel Turns
		A	B	C			
In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg	PSI/°F • PN/°C	–
2½	2.875	11.44	7.38	4.33	19.7	300/300	8
65	73.0	290.6	187.5	110.0	8.9	20.7/150	
76.1mm	3.000	11.44	7.38	4.33	19.7	300/300	8
65	76.1	290.6	187.5	110.0	8.9	20.7/150	
3	3.500	12.25	8.00	4.33	27.8	300/300	8
80	88.9	311.2	203.2	110.0	12.6	20.7/150	
4	4.500	13.75	9.44	6.30	45.3	300/300	8
100	114.3	349.3	239.8	160.0	20.6	20.7/150	
139.7mm	5.500	15.75	11.13	6.30	70.0	300/300	8
125	139.7	400.0	282.7	160.0	31.8	20.7/150	
5	5.563	15.75	11.13	6.30	70.0	300/300	8
125	141.3	400.0	282.7	160.0	31.8	20.7/150	
165.1mm	6.500	18.88	11.25	6.30	95.7	300/300	8
150	165.1	479.6	285.8	160.0	43.5	20.7/150	
6	6.625	18.88	11.25	6.30	95.7	300/300	8
150	168.3	479.6	285.8	160.0	43.5	20.7/150	
8	8.625	23.63	18.44	11.8	255.2	300/300	12
200	219.1	600.2	468.4	300.0	116	20.7/150	
10	10.750	28.75	18.88	11.80	377.3	300/300	12
250	273.1	730.3	479.6	300	171.5	20.7/150	
12	12.750	33.44	20.25	11.80	520.3	300/300	12
300	323.9	849.4	514.4	300.0	236.5	20.7/150	

For information on larger sizes, contact an ASC Engineered Solutions Sales Representative.
See circuit balancing valve Specifications on pages 1–2.



2½" to 6" (65 to 150mm)



8" to 12" (200 to 300mm)

Circuit Balancing Valves – Flanged Ends, ANSI Class 125# Model CB800

The Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. One valve serves five functions: throttling, measuring (pressure and temperature), positive shutoff, draining, and filling. The Gruvlok Flange-by-Flange Model CB800 Valve, available in sizes 2½" to 12" (65mm to 300mm), is composed of cast iron.

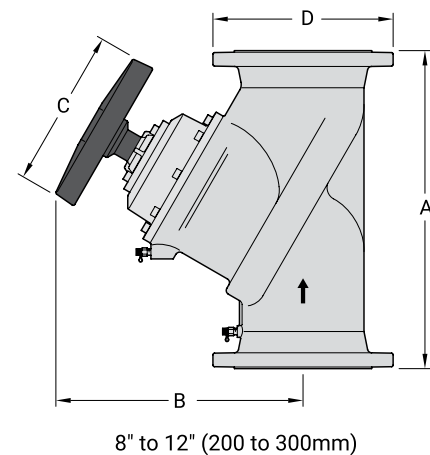
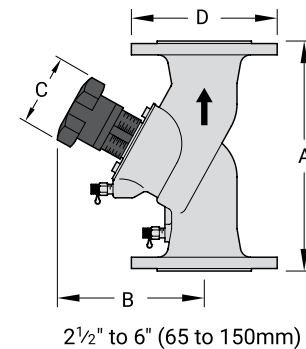
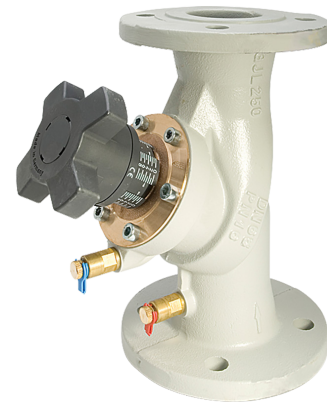
The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff

CB800 Circuit Balancing Valves – Flanged Ends, ANSI Class 125#

Valve Size	O.D.	Dimensions				Approx. Wt. Ea.	Limits	Handwheel Turns
		A	B	C	D			
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg	PSI/"F • PN/"C	-
2½"	2.875	11.44	7.38	4.33	7.25	31.7	235/300	8
65	73.0	290.6	187.5	110.0	184.2	14.4	16/150	
76.1mm	3.000	11.44	7.38	4.33	7.25	31.7	235/300	8
65	76.1	290.6	187.5	110.0	184.2	14.4	16/150	
3	3.500	12.25	8.00	4.33	7.88	39.8	235/300	8
80	88.9	311.2	203.2	110.0	200.2	18.0	16/150	
4	4.500	13.75	9.50	6.30	8.69	61.3	235/300	8
100	114.3	349.3	241.3	160.0	220.7	27.8	16/150	
139.7mm	5.500	15.75	11.13	6.30	9.88	89.9	235/300	8
125	139.7	400.1	282.7	160.0	250.9	40.9	16/150	
5	5.563	15.75	11.13	6.30	9.88	89.9	235/300	8
125	141.3	400.1	282.7	160.0	250.9	40.9	16/150	
165.1mm	6.500	18.88	11.25	6.30	11.25	113.9	235/300	8
150	165.1	479.6	285.8	160.0	285.8	51.8	16/150	
6	6.62500	18.88	11.25	6.30	11.25	113.9	235/300	8
150	168.3	479.6	285.8	160.0	285.8	51.8	16/150	
8	8.625	23.63	18.38	11.80	13.38	361.9	235/300	12
200	219.1	600.2	466.9	300.0	339.9	164.5	16/150	
10	10.750	28.75	18.94	11.80	15.94	431.2	235/300	12
250	273.1	730.3	481.1	300.0	404.9	196.0	16/150	
12	12.750	33.50	20.25	11.80	18.13	581.9	235/300	12
300	323.9	850.9	514.4	300.0	460.5	264.5	16/150	

For information on larger sizes, contact an ASC Engineered Solutions Sales Representative. See circuit balancing valve Specifications on pages 1-2.



Circuit Balancing Valves – Flanged Ends, PN16/PN10 Model CB800

The Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. One valve serves five functions: throttling, measuring (pressure and temperature), positive shutoff, draining, and filling. The Gruvlok Flange-by-Flange Model CB800 Valve, available in sizes 2½" to 12" (65mm to 300mm), is composed of cast iron.

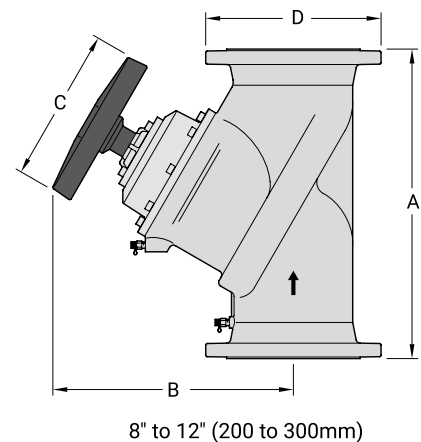
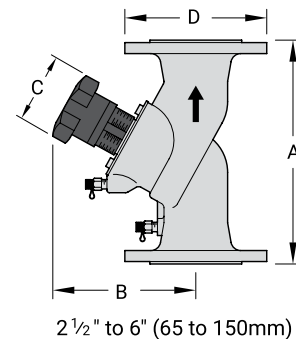
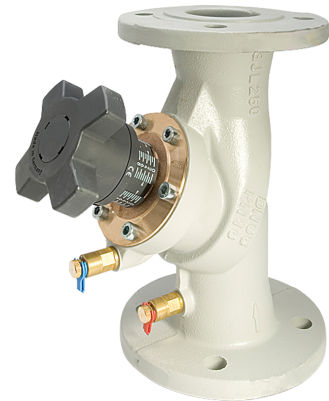
The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff

CB800 Circuit Balancing Valves – Flanged Ends, PN16/PN10

Valve Size	O.D.	Dimensions				Approx. Wt. Ea.	Limits	Handwheel Turns
		A	B	C	D			
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg	PSI/"F • PN/"C	–
2½"	2.875	11.44	7.38	4.33	7.25	31.7	235/300	8
65	73.0	290.6	187.5	110.0	184.2	14.4	16/150	
76.1mm	3.000	11.44	7.38	4.33	7.25	31.7	235/300	8
65	76.1	290.6	187.5	110.0	184.2	14.4	16/150	
3	3.500	12.25	8.00	4.33	7.88	39.8	235/300	8
80	88.9	311.2	203.2	110.0	200.2	18.0	16/150	
4	4.500	13.75	9.50	6.30	8.69	61.3	235/300	8
100	114.3	349.3	241.3	160.0	220.7	27.8	16/150	
139.7mm	5.500	15.75	11.13	6.30	9.88	89.9	235/300	8
125	139.7	400.1	282.7	160.0	250.9	40.9	16/150	
5	5.563	15.75	11.13	6.30	9.88	89.9	235/300	8
125	141.3	400.1	282.7	160.0	250.9	40.9	16/150	
165.1mm	6.500	18.88	11.25	6.30	11.25	113.9	235/300	8
150	165.1	479.6	285.8	160.0	285.8	51.8	16/150	
6	6.625	18.88	11.25	6.30	11.25	113.9	235/300	8
150	168.3	479.6	285.8	160.0	285.8	51.8	16/150	
8	8.625	23.63	18.38	11.80	13.38	361.9	235/300	12
200	219.1	600.2	466.9	300.0	339.9	164.5	16/150	
10	10.750	28.75	18.94	11.80	15.94	431.2	235/300	12
250	273.1	730.3	481.1	300.0	404.9	196.0	16/150	
12	12.750	33.50	20.25	11.80	18.13	581.9	235/300	12
300	323.9	850.9	514.4	300.0	460.5	264.5	16/150	

For information on larger sizes, contact an ASC Engineered Solutions Sales Representative. See circuit balancing valve Specifications on pages 1–2.



Circuit Balancing Valves Model CB800



CB800
Flanged Ends

CB800
Grooved Ends



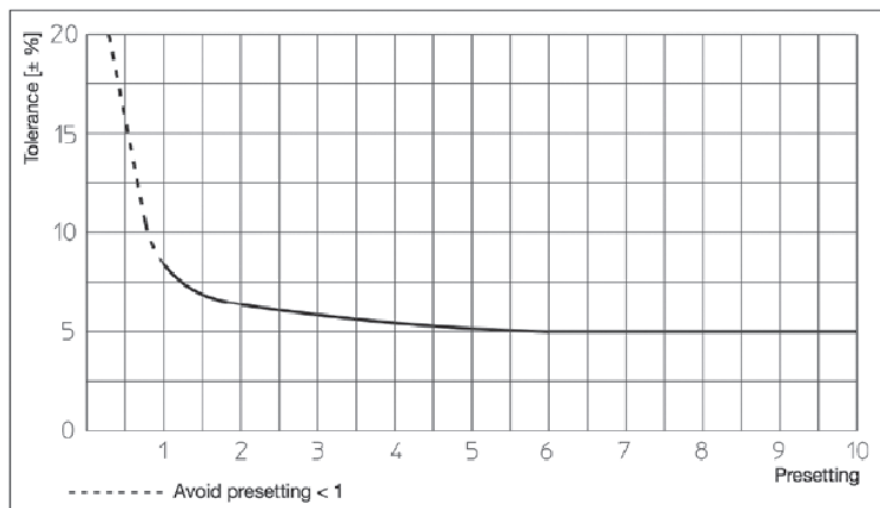
Calibrated Balancing Valve Flow Specifications Grooved and Flanged Ends

Valve Size	Absolute Minimum Flow	Recommended Minimum Flow	Recommended Maximum Flow	Absolute Maximum Flow
In./mm	GPM(L/s)			
2½ 65	1.4 0.088	47 2.97	106.0 6.69	335.3 21.15
3 80	1.5 0.095	48 3.03	132.2 8.34	418.1 26.38
4 100	1.9 0.120	78 4.92	217.5 13.72	687.7 43.39
5 125	4.2 0.265	87 5.49	317.0 20.00	1,002 63.2
6 150	5 0.315	180 11.36	437.4 27.60	1,383 87.3
8 200	30 1.89	163 10.28	881.3 55.60	2,787 175.8
10 250	70 4.42	210 13.25	1,298 81.9	4,106 259.1
12 300	115 7.26	518 32.68	1,731 109.2	5,474 345.4

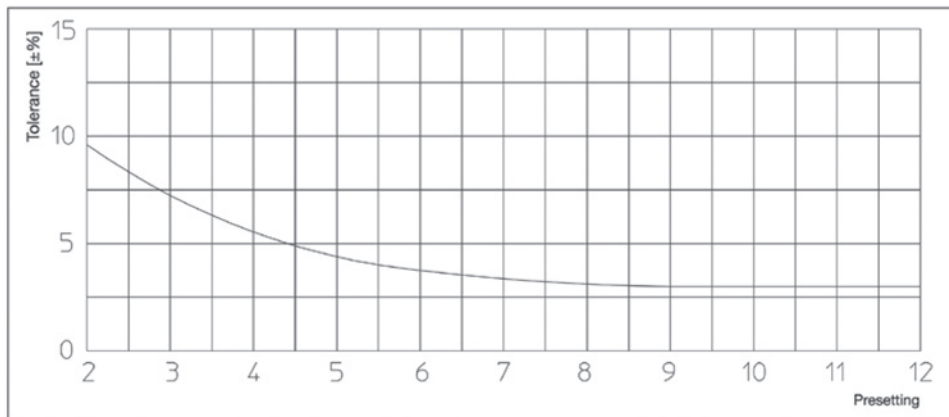
Circuit Balancing Valves Model CB800

Flow Measurement Accuracy

2½" – 6" Valves Flow Measuring Tolerance

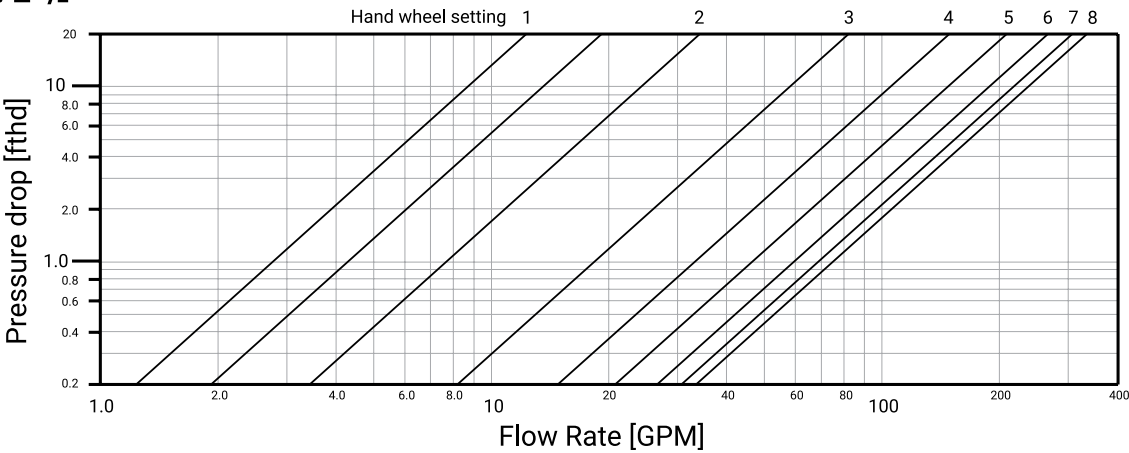


8" – 12" Valves Flow Measuring Tolerance

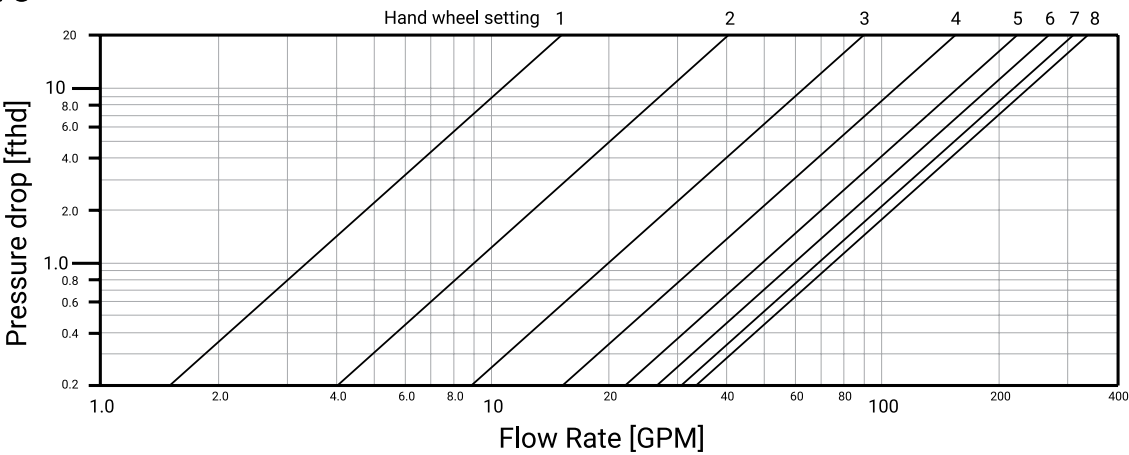


Circuit Balancing Valves **Model CB800**

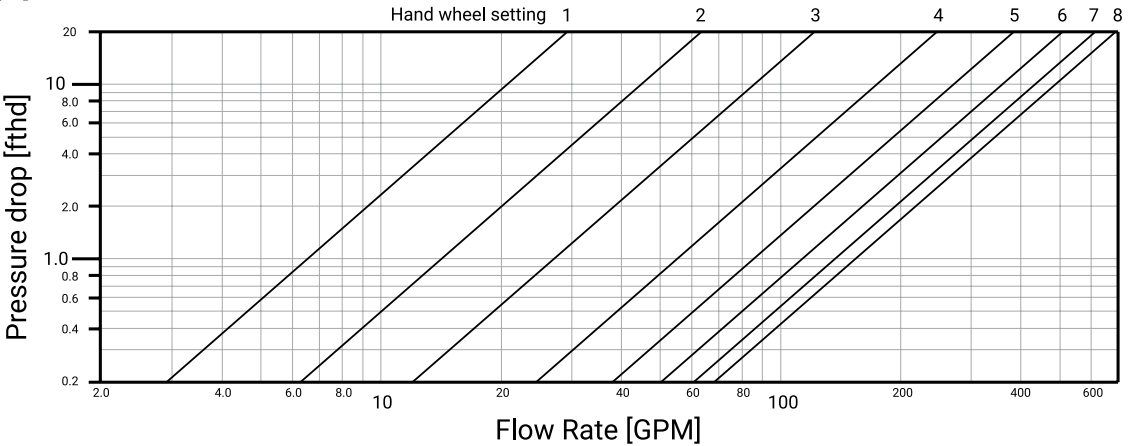
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Size: 3"

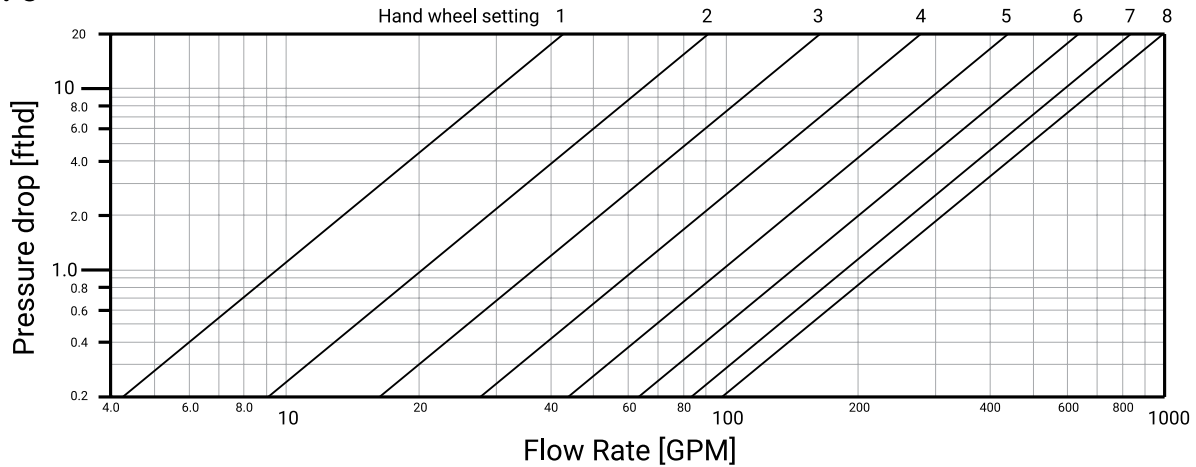


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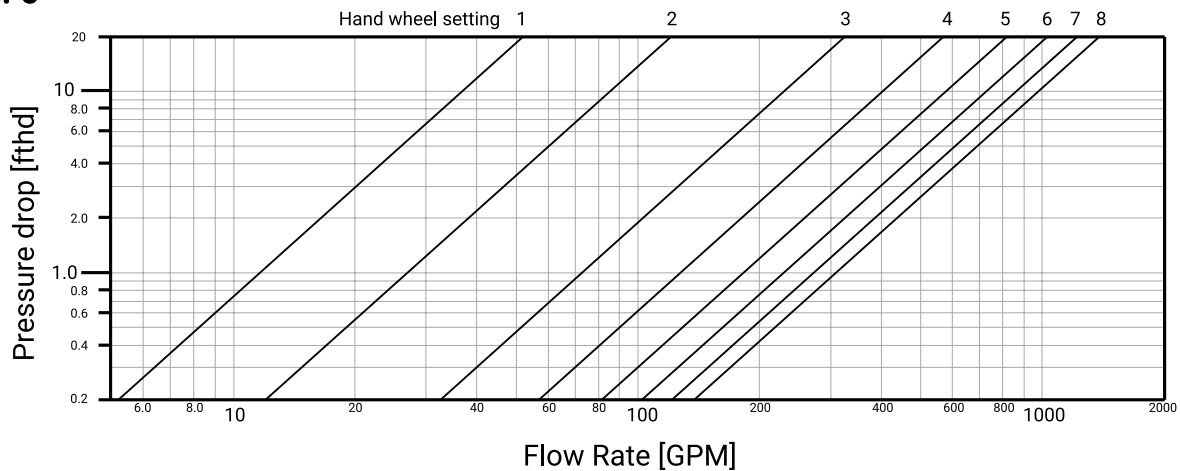


Circuit Balancing Valves Model CB800

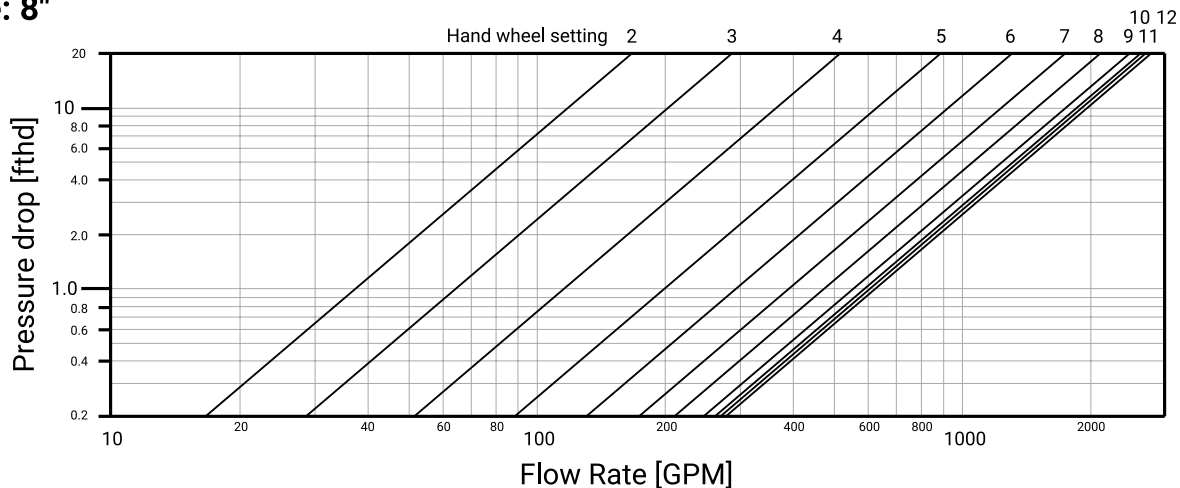
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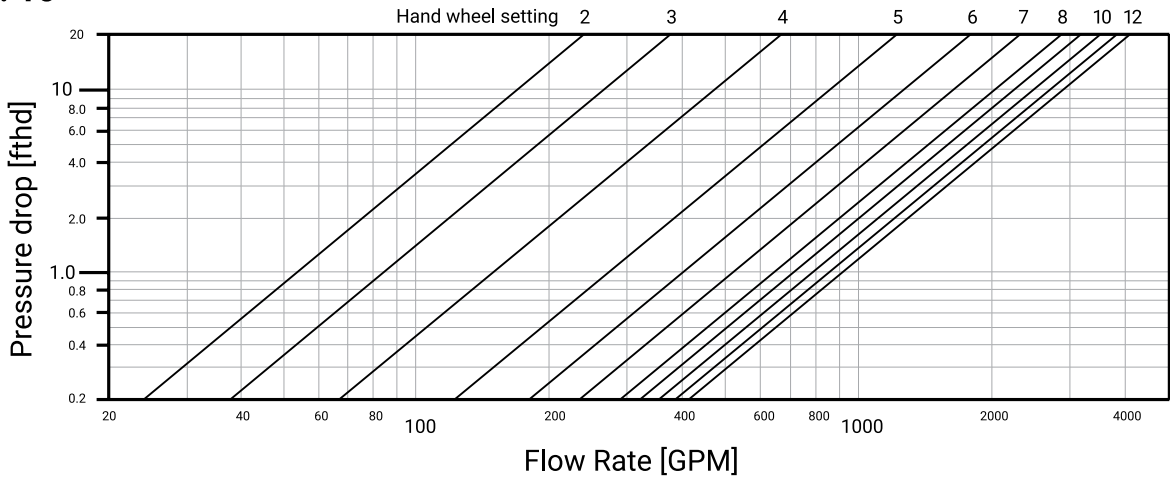


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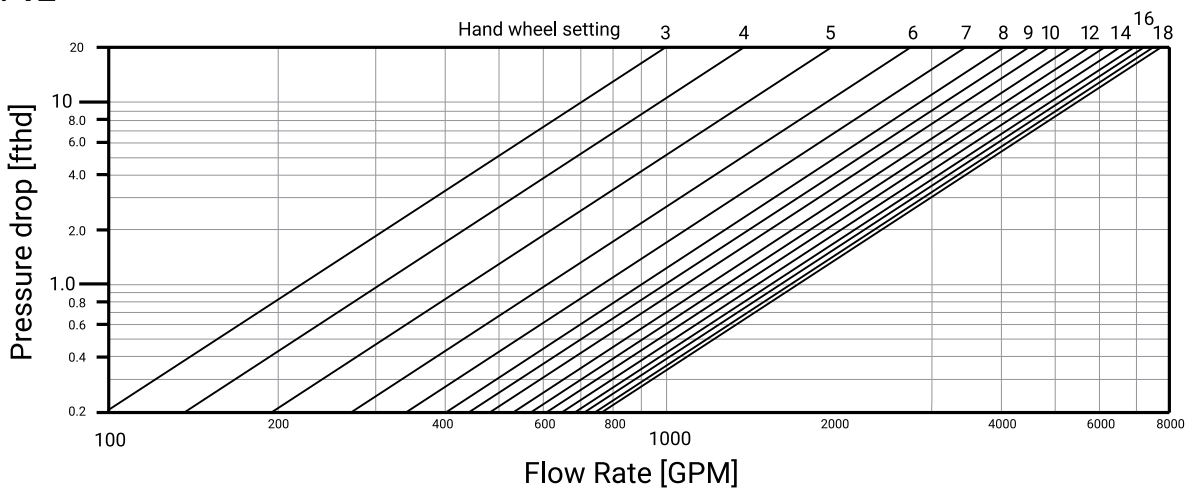


Circuit Balancing Valves
 Model CB800

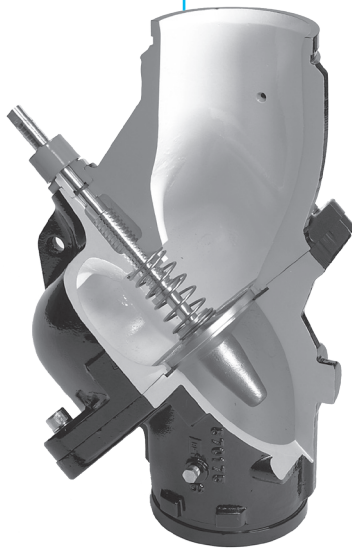
Size: 10"



Size: 12"



Tri-Service Valve Fig. FTV-S (Straight) & FTV-A (Angle Body)



Service Recommendations

The Model FTV-S & FTV-A Tri-Service Valve is primarily designed for installation in pump discharge piping where it functions as a spring loaded silent check valve, flow control valve and shut off valve.

Operation

The Model FTV Tri-Service Valve operates automatically and silently. Line pressure of approximately ¼ PSI will open the disc. The spring closes the disc as the line flow approaches zero in order to prevent flow reversal & water hammer. The flow through the valve can be adjusted from bubble tight shut off to full flow by the threaded rising stem.

Features

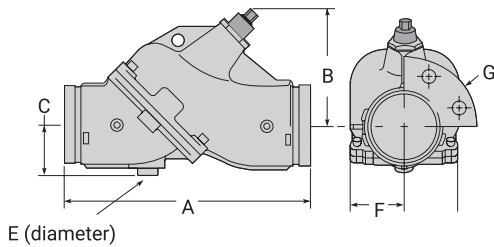
The unique convertible body design permits the valve to be changed on site from the straight to the angle configuration. Flow measurement (where an approximate indication is acceptable) is obtained by flow measuring ports on each side of the valve seat. Pressure differential is easily recorded using differential pressure measurement devices. If precision accuracy is required, we recommend that a Gruvlok Circuit Balancing Valve be installed downstream from the FTV valve.

See Install instructions and flow data on submittal.

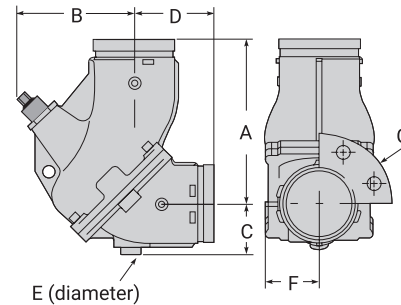
Features & Benefit

- Three functions, one valve —
 1. Spring-closure design,
 2. Non-slam check valve,
 3. Flow throttling valve
- Reduced field installation and material cost
- Stainless steel spring
- High-strength resin seat EPDM for 8" and larger
- Anti-rotation lugs on the inlet and outlet. These lugs, combined with the Gruvlok 7401 Rigidlok Coupling or the Gruvlok flange adapter provides for a ridged rotation free installation
- Flow measurement and pump throttling capabilities
- Temperature measurement capability
- Spring-closure design check valve prevents gravity or reverse circulation when pump is not operating
- Bonnet "O" Ring can be replaced under full system pressure by back seating of valve stem
- Suitable for maximum working pressure to 375 psi (26 bar) and temperatures to 230°F. (110°C)
- Valve seat can be changed in the field without use of special tools
- Low pressure drop due to "Y" pattern valve design
- Valve Cv designed to ASHRAE flow recommendations for quiet system operation
- Drip-tight shut off valve smoke development rating of 50 or less

Tri-Service Valve Fig. FTV-S (Straight) & FTV-A (Angle Body)



E (diameter)



E (diameter)

Model FTV-S (Straight)

Connection Size	A	B (fully open)	C	E	F	Flange 125/150 PSI G	Flange 250/300 PSI G	Approx. Wt. Each
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2½ 65	12 305	7 178	2¾ 70	1 25	2⅞ 65	7 178	7½ 191	19 9
3 80	12 305	7⅞ 198	2⅞ 62	1 25	3 80	7½ 191	8¼ 210	24 11
4 100	14 356	8 203	3 80	1¼ 32	3⅞ 87	9¼ 235	10 254	42 19
5 125	17½ 445	10⅞ 257	3⅞ 92	1¼ 32	4⅞ 125	10 254	11 279	81 37
6 150	20⅞ 525	10⅞ 264	4⅞ 113	2 51	5⅞ 149	11 279	12½ 318	120 54
8 200	28⅞ 716	22⅞ 579	5⅞ 144	2¼ 57	7⅞ 200	13½ 343	15 381	300 136
10 250	30 762	28⅞ 727	6⅞ 167	2¼ 57	9⅞ 241	16 409	17½ 445	450 204
12 300	38⅞ 967	32⅞ 829	7⅞ 194	2¼ 57	12⅞ 321	19 483	20½ 521	850 390

See previous page for O.D. Size

Model FTV-A (Angle)

Connection Size	A	B (fully open)	C	D	E	F	Flange 125/150 PSI G	Flange 250/300 PSI G	Approx. Wt. Each
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2½ 65	7⅞ 187	7 178	2¾ 70	4⅞ 117	1 25	2⅞ 65	7 178	7½ 191	19 9
3 80	8⅞ 208	7⅞ 198	2⅞ 62	3⅞ 98	1 25	3 80	7½ 191	8¼ 210	24 11
4 100	9⅞ 244	8 203	3 80	4⅞ 111	1¼ 32	3⅞ 87	9¼ 235	10 254	42 19
5 125	12 305	10⅞ 257	3⅞ 92	5½ 140	1¼ 32	8⅞ 125	10 254	11 279	81 37
6 150	14⅞ 359	10⅞ 264	4⅞ 113	6⅞ 168	2 51	5⅞ 149	11 279	12½ 318	120 54
8 200	18⅞ 481	18¾ 476	5⅞ 144	9⅞ 233	2¼ 57	7⅞ 200	13½ 343	15 381	300 136
10 250	20⅞ 516	24 610	6⅞ 167	9¾ 248	2¼ 57	9⅞ 241	16 409	17½ 445	450 204
12 300	24⅞ 611	26¼ 667	7⅞ 194	14 356	2¼ 57	12⅞ 321	19 483	20½ 521	860 390

See previous page for O.D. Size

Material Specifications

Body: Ductile Iron ASTM A 536 Grade 65-45-12

Disc: Bronze ASTM B 584 C-84400

Stem: Stainless Steel ASTM A 582 Type 416

Seat: High Strength Engineered Resin

Spring: Stainless Steel ASTM A 302

"O" Rings: BUNA

Couplings/flanges: Ductile Iron ASTM A 536 Grade 65-45-12 with EPDM² Gaskets (Optional)

Insulation: Optional¹

Note 1: Optional pre-formed insulation is available to meet ASTM D 1784 Class 14253-C, MEA #7-87, ASTM E 136 with a flame spread rating of 25 or less and a smoke development rating of 50 or less.

Note 2: EPDM is not suitable for oil service.

Note: For temperatures between 230°F and 300°F (110°C and 149°C) specify Viton Elastomers

